

### Claims

1. A telescoping actuator comprising:

a lead screw;

5 a lead tangential interference stop feature attached to said lead screw;

a first tubular screw, said first tubular screw having inner threads; and

a first tangential interference stop feature attached to said inner threads of  
said first tubular screw;

wherein said lead screw is threadably engaged to said first tubular screw;

10 wherein upon rotation of said lead screw, said lead screw translates out  
from said first tubular screw;

and further wherein said lead tangential interference stop feature  
tangentially contacts said first tangential interference stop feature, and further wherein  
upon contact of said lead tangential interference stop feature and said first tangential  
15 interference stop feature, said first tubular screw rotates in unison with said lead screw.

2. The telescoping actuator according to claim 1, further comprising a housing to  
enclose said actuator, said housing comprising a first and second segment, wherein said  
first segment and said second segment further comprise longitudinal limit stops, and

20 wherein said first segment is rotatably keyed to said second segment, and further wherein  
said first segment of said housing translates relative to said second segment of said  
housing within said longitudinal limit stops, thereby preserving a limited portion of  
overlapping sleeved engagement between said first segment and said second segment.

3. The telescoping actuator according to claim 1, further comprising:

a second tubular screw, said second tubular screw comprising inner threads;

5 wherein said first tubular screw further comprises outer threads;

a second tangential interference stop feature, said second tangential interference stop feature attached to said outer threads of said first tubular screw; and

a third tangential interference stop feature, said third tangential interference stop feature attached to said inner threads of said second tubular screw;

10 wherein said outer threads of said first tubular screw are threadably engaged with said inner threads of said second tubular screw;

and further wherein said second tangential interference stop feature tangentially contacts said third tangential interference stop feature, thereby causing said second tubular screw to rotate in unison with said lead screw and said first tubular screw.

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4. The telescoping actuator according to claim 1, wherein said telescoping actuator comprises a linear drive actuator converting rotary motion to linear motion.

5. The telescoping actuator according to claim 4, wherein said linear drive actuator

20 comprises an antenna.

6. The telescoping actuator according to claim 1, wherein said telescoping actuator comprises a surgical device.

7. The telescoping actuator according to claim 1, wherein said threads of said lead screw extend along said lead screw for a distance that is less than the length of said lead screw.

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8. The telescoping actuator according to claim 1, wherein said inner threads of said first tubular screw extend along said first tubular screw for a distance that is less than the length of said first tubular screw.

10 9. The telescoping actuator according to claim 1, wherein said lead tangential interference stop feature is positioned on said lead screw so that said lead screw does not translate substantially completely out of said first tubular screw.

10. The telescoping actuator according to claim 1, further comprising a grounding  
15 bracket coupled to said lead screw.

11. A telescoping actuator comprising:

a lead tubular screw, said lead tubular screw comprising inner threads;

a lead tangential interference stop feature attached to said lead tubular

20 screw;

a second tubular screw, said second tubular screw comprising outer threads; and

a first tangential interference stop feature attached to said outer threads of  
said second tubular screw;

wherein said lead tubular screw is threadably engaged to said second  
tubular screw;

5                    wherein upon rotation of said lead tubular screw, said lead tubular screw  
translates out from said second tubular screw;

                  and further wherein said lead tangential interference stop feature  
tangentially contacts said first tangential interference stop feature, and further wherein  
upon contact of said lead tangential interference stop feature and said first tangential  
10    interference stop feature, said second tubular screw rotates in unison with said lead  
tubular screw.

12.     The telescoping actuator according to claim 11, further comprising a housing to  
enclose said actuator, said housing comprising a first and second segment, said first and  
15    second segment comprising longitudinal limit stops, wherein said first segment is  
rotatably keyed to said second segment, and further wherein said first segment of said  
housing translates relative to said second segment of said housing within said  
longitudinal limit stops, thereby preserving a limited portion of overlapping sleeved  
engagement between said first segment and said second segment.

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13.     The telescoping actuator according to claim 11, further comprising:

a third tubular screw, said third tubular screw comprising outer threads;

wherein said second tubular screw further comprises inner threads;

a second tangential interference stop feature, said second tangential interference stop feature attached to said inner threads of said second tubular screw; and

a third tangential interference stop feature, said third tangential interference stop feature attached to said outer threads of said third tubular screw;

5 wherein said inner threads of said second tubular screw are threadably engaged with said outer threads of said third tubular screw;

and further wherein said second tangential interference stop feature tangentially contacts said third tangential interference stop feature, thereby causing said third tubular screw to rotate in unison with said lead tubular screw and said second  
10 tubular screw.

14. The telescoping actuator according to claim 11, wherein said telescoping actuator comprises a linear drive actuator converting rotary motion to linear motion.

15 15. The telescoping actuator according to claim 14, wherein said linear drive actuator comprises an antenna.

16. The telescoping actuator according to claim 11, wherein said telescoping actuator comprises a surgical device.

20 17. The telescoping actuator according to claim 11, wherein said threads of said lead tubular screw extend along said lead tubular screw for a distance that is less than the length of said lead tubular screw.

18. The telescoping actuator according to claim 11, wherein said outer threads of said second tubular screw extend along said second tubular screw for a distance that is less than the length of said second tubular screw.

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19. The telescoping actuator according to claim 11, wherein said lead tangential interference stop feature is positioned on said lead tubular screw so that said lead tubular screw does not translate substantially completely off of said second tubular screw.

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20. A telescoping actuator comprising:

a lead screw;

one or more concentric screws; and

one or more tangential interference stop features;

wherein rotation of said lead screw causes said lead screw to translate out

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of or off of said concentric screws, said extension occurring until a first tangential interference stop feature positioned on said lead screw tangentially contacts a second tangential interference stop feature positioned on a first concentric screw; and

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wherein upon said tangential contact of said first tangential interference stop feature and said second tangential interference stop feature, further rotation of said lead screw causes said first concentric screw to rotate in unison with said lead screw, thereby forming a tier between said lead screw and said first concentric screw.

21. A telescopic actuator comprising:

a lead screw;

a lead tangential interference stop feature attached to said lead screw;

5 a first screw; and

a first tangential interference stop feature attached to said first screw;

wherein said lead screw is threadably engaged to said first screw;

wherein upon rotation of said lead screw, said lead screw translates away  
from said first screw;

10 and further wherein said lead tangential interference stop feature  
tangentially contacts said first tangential interference stop feature, and further wherein  
upon tangential contact of said lead tangential interference stop feature and said first  
tangential interference stop feature, said first screw rotates in unison with said lead screw.

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